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John F. Kennedy Space Center

Mission update

STS-101 and STS-106

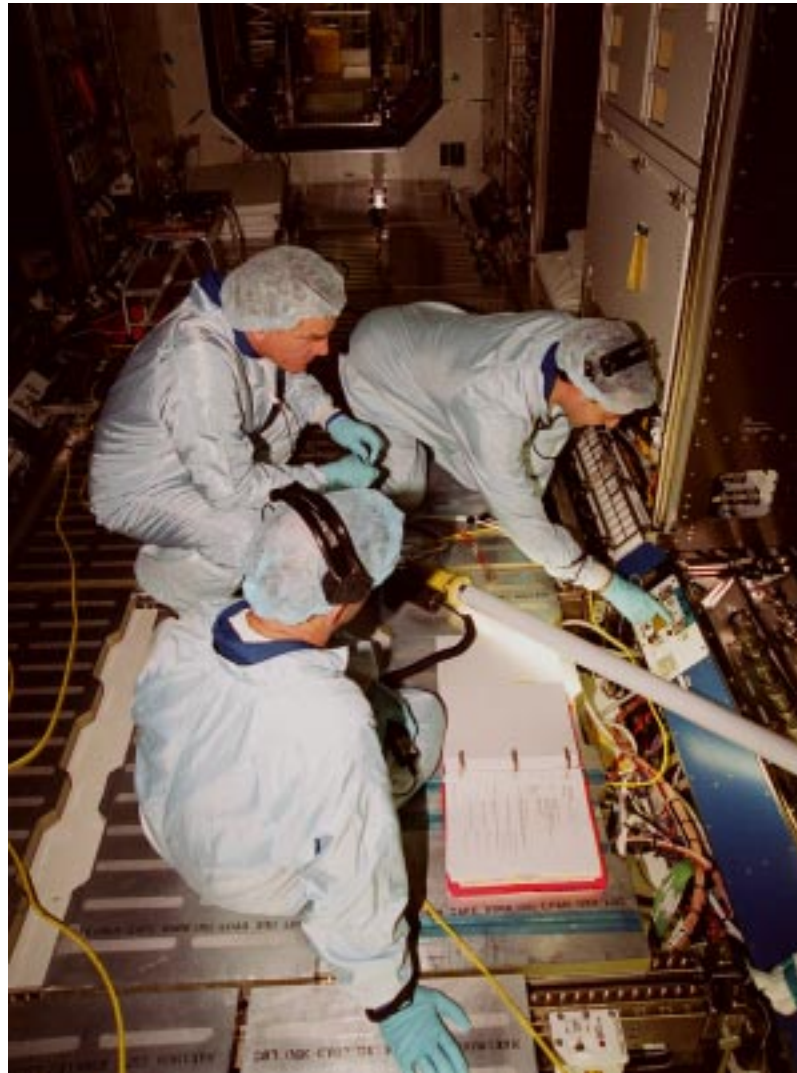
Veteran Shuttle commanders James Halsell and Terrence Wilcutt will lead the next two missions to continue on-orbit assembly of the International Space Station, NASA managers announced on Feb. 18.

Halsell will lead a crew of seven on the STS-101 mission, which is scheduled to launch aboard Space Shuttle Atlantis no earlier than April 13. Pilot Scott Horowitz and mission specialists Mary Ellen Weber and Jeffrey Williams will remain as part of the STS-101 crew. Completing the crew are mission specialists James Voss, Susan Helms and cosmonaut Yuri V. Usachev, all of whom will later serve as the second resident ISS crew.

Three mission specialists previously assigned to STS-101 — Ed Lu and cosmonauts Yuri Malenchenko and Boris Marukov — will move to the STS-106 mission to perform tasks linked to the planned July arrival of the Russian-built service module.

Wilcutt will lead the seven-member crew on the STS-106 mission, which is scheduled to launch aboard the Space Shuttle Atlantis no earlier than Aug. 19. Joining Wilcutt, Lu, Malenchenko and Marukov are pilot Scott Altman and mission specialists Richard Mastracchio and Dan Burbank. STS-106 will be the first space flight for

(See ISS, Page 3)



Clockwise from left, astronaut James Voss and STS-98 crew members Kenneth D. Cockrell and Mark Polansky study the inside of the U.S. Laboratory module. The trio were participating in a recent Multi-Equipment Interface Test in the Space Station Processing Facility.

Tests offer green light for Station

"Atlantis, Houston. You are 'go' to perform critical activation of the U.S. Lab."

Those words are much closer to reality with the recent completion at KSC of the most comprehensive series of integrated tests in the human space flight program since the first Space Shuttle was tested before its initial flight.

The operations performed by a Multi-Element Integration Test (MEIT) team required International Space Station (ISS) flight hardware elements for four missions to be arranged on the ground as closely as possible to their eventual on-orbit configuration. From Jan. 18 through Feb. 7, the MEIT team conducted testing 24 hours a day, seven days a week.

The successful results paved the way for these next station elements, now on the ground, to be launched this year.

The complicated procedures

(See Tests, Page 2)

Workers improve by degrees

Fellowships program, seminars yield results

It would have been impossible for Martha Williams to pursue a doctorate degree without the support of her employer — NASA. And it would be difficult for Kennedy Space Center to become more of a development-inclined center without employees who hold the highest possible academic credentials.

So it's clear that both employee

and employer are benefiting from the Dr. Hugh L. Dryden Memorial Science Fellowship that Williams received last year. The fellowship brings with it a \$10,000 grant from NASA, as well as one year of freedom to pursue an academic degree full-time. (Williams also received an associated \$2,000 grant from the National Space Club, a private organization.)

Since receiving the fellowship last January, Williams has been working toward her Ph.D. in

chemistry from Florida Institute of Technology in Melbourne. A chemist with a master's degree in the Materials Science Laboratory at KSC, Williams is concentrating on research involving the properties of high-performance polymers developed by Langley Research Center.

"It will benefit me in the sense that an element of the lab is going more into research and develop-

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Tests ...

(Continued from Page 1)

involved ISS flight crews working with test team members from NASA, Boeing Co. and United Space Alliance, and support contractors for KSC, Johnson Space Center, Marshall Space Flight Center, Goddard Space Flight Center, Merritt Island Spaceflight Tracking and Data Network Stations and White Sands Missile Range. Hundreds of workers at the various sites took part in the two primary tests.

NASA engineers at KSC, JSC, and MSFC developed and implemented test procedures based on ISS program requirements and worked in a team environment during execution of the tests.

"The integration of the procedures, flight hardware and software, and test team personnel with the networking of the the Centers was a significant challenge," said John Straiton of the Shuttle payloads directorate, chief of the MEIT Implementation Office. "The successful completion of the tests was a result of the dedication and personal commitment by all those involved."

The MEIT is an ongoing practice designed to make sure ISS elements will work together properly before they are launched. The latest series of integrated testing started Jan. 3 and will not be entirely completed before mid-March.

The first major test in the recent operations, known as an End-to-End (ETE) test, verified the ability of the Mission Control Center in Houston to command, control, and operate the combined Space Station elements through the Tracking Data Relay Satellite System (TDRSS) in this on-orbit configuration.

"The ETE test was preceded by local tests of the flight hardware and software interfaces and systems functionality prior to networking off-site," said Gary Powers, NASA/KSC lead ETE test director.

Elements of four of the next major ISS missions were "soft-mated" together in the on-orbit configuration for an extensive set of flight-readiness testing with the ISS Mission Control Center in Houston and the Payload Control



Workers in the Space Station Processing Facility monitor elements of the International Space Station during recent operations in the Multi-Element Integration Test. A mission sequence test confirmed the compatibility of elements for four upcoming flights to the Space Station.

"This has been a tremendous test and has given me a lot of confidence for the mission."

**KEN COCKRELL,
STS-98 COMMANDER**

Center at the Marshall Space Flight Center. Soft-mating refers to the functional connection of cables and fluid lines through the element structures — as opposed to physical mating.

The elements involved in the test were the PMA-3 and the Z-1 Truss (ISS-3A/STS-92), the PVM-P6 truss (ISS-4A/STS-97), and Destiny, the U.S. Laboratory module (ISS-5A/STS-98). With the successful completion of testing on the ground, the Station elements will be disconnected to begin their individual launch processing for flight and will not be joined again until they reach orbit.

The second major test in the series, a Mission Sequence Test (MST), conducted a "dress rehearsal" of the planned ISS 5A mission (STS-98) to assess both ground and crew procedures that will be used in activating the elements on-orbit. The crews who will perform the procedures during the actual on-orbit activation ran the flight procedures according to the planned timeline and sequence order.

Some of these flight procedures, such as activation of the lab's

critical systems, must be performed within a precise time frame. The test addressed the need to prove such capabilities prior to flight. The MST also provided an opportunity for the crews and flight controllers to gain added familiarity and experience, so that nothing is performed for the first time on-orbit.

"We wanted to 'fly' the U.S. Lab mission on the ground in conditions as close to flight as possible," said Rob Kelso, JSC lead STS-98 flight director. "The launch of the U.S. Lab ties all of the other elements together and the lab becomes the heart and brains to the U.S. systems, and thus it is one of the most critical flights in the early assembly sequence."

The launch of the U.S. Laboratory module will bring to life new systems capability in environmental control, attitude control, flight computers/software, high-rate communications and thermal control to the station.

Ten computers will be launched in the U.S. Laboratory module to the Station, including three command and control computers, which take over control of the Station from the software in computers on board the Unity node launched on STS-88.

With the flight control teams directing the operation from Houston for the test, astronaut Bill Shepherd, commander of the first U.S. flight crew to the Station, and members of the STS-98 crew headed by astronaut Ken Cockrell

The following flight hardware was mated together in the Space Station Processing Facility for the End-to-End and Mission Sequence Tests:

Mission ISS-3A/STS-92

- Z-1 Integrated Truss Segment — provides early exterior framework to allow first U.S. solar arrays on ISS-4A to be temporarily installed on Unity for early power.
- Pressurized Mating Adapter (PMA-3) — provides Shuttle docking port during solar array installation on ISS-4A and U.S. Lab installation on ISS-5A.

Mission ISS-4A/STS-97

- Port Photovoltaic Module and Long Spacer (PVM-P6) — is part of the ISS Electrical Power System, which includes solar arrays, beta gimbals, energy storage subassembly, cabling, and the alpha gimbals. Provides early power and thermal capability for the U.S. Lab (ISS-5A)

Mission ISS-5A/STS-98

- U.S. Lab — provides inhabitable "shirt-sleeve" environment for research, technology development and repairs by the on-orbit crew.

participated exactly as they will during flight by operating the flight elements at KSC.

At the conclusion of the test, Cockrell voiced his feelings from inside the lab: "This has been a tremendous test and has given me a lot of confidence for the mission."

Planners called the successful tests a significant milestone in the preparation to fly the ISS elements. The tests proved the ability to command, control and receive telemetry data from the ISS, communicate over the new voice systems, process video, and provide the necessary systems control and monitoring for such functions as attitude control, life support, and active thermal control.

A joint statement from MEIT team members Bill Stinson, Jeff Orr and Stephanie Sowards summed up the sentiments of many involved: "Launch day of these elements just became a lot closer to us all. We can't wait until they're launched and the on-orbit assembly and activation of the ISS begins."



Larry Ludwig of the Materials Science Laboratory describes the environmental chamber to guests at the dedication ceremony on Feb. 18. The chamber can simulate the atmospheres of Mars and the moon.

Environmental chamber honors memory of Dr. Lin

An Environmental Chamber capable of simulating the Martian atmosphere was dedicated to the late Dr. Gary Lin in a ceremony on Feb. 18.

Dr. Lin was the chief of the Analysis Division in the Materials Science Laboratory (MSL) when he died last October.

The chamber, located at the Development Testing Laboratory, is 17 feet long and 7-1/2 feet in diameter, with a volume of 770 cubic feet. Its surface is covered with a 4-1/2-inch layer of the same foam insulation used on the external tanks of the Space Shuttle.

The chamber will allow experiments on the possibility of plant

growth and the feasibility of converting atmospheric elements into oxygen. Other uses for the chamber include assessing how certain materials burn in the Martian atmosphere, determining the planet's electrostatic properties and testing flight hardware.

The chamber is capable of generating internal temperatures as low as -320 degrees Fahrenheit. The lighting system inside the chamber will be used to simulate the Martian daily cycle during experiments.

MSL Chief Tim Bollo said the chamber can also be used to simulate conditions on the moon or in deep space.

Rising radar



The Space Shuttle Endeavour rises into a perfectly clear sky from Pad 39A during its launch on Feb. 11. The Shuttle Radar Topography Mission, the first mission of 2000, proved to be a great success. Using specially designed radar equipment, the STS-99 crew completed its goal of mapping most of the Earth's land mass, gathering data that will lead to the creation of the most precise surface maps ever produced. The six-person crew of Endeavour was scheduled to land at KSC's Shuttle Landing Facility on Feb. 22. STS-99 was the 97th Space Shuttle mission.

ISS ...

(Continued from Page 1)

Burbank and Mastracchio, members of the 1996 class of astronauts.

The original mission objectives for STS-101 have been distributed between the two missions. The STS-101 crew will prepare the Space Station for the arrival of the Zvezda service module by conducting one spacewalk, performing some maintenance tasks on board the station, and delivering a variety of logistics and supplies to the orbiting outpost.

The STS-106 astronauts, scheduled to visit the ISS following the arrival of Zvezda, will conduct at least one spacewalk to perform tasks linked to the presence of the service module. They will also transfer various supplies to outfit the Station in preparation for the arrival of the first long-duration crew.

In addition to these assignments, European Space Agency astronaut Umberto Guidoni has been named to the crew of STS-100, which will carry the Multi-Purpose Logistics Module (Raffaello), provided by the Italian Space Agency for the Space Station. Guidoni joins Canadian astronaut Chris Hadfield and Scott Parazynski, who previously were named to the flight.

Service module launch

The launch of the International Space Station's next component — the Zvezda service module — is scheduled to occur between July 8 and July 14 from the Baikonur Cosmodrome in Kazakhstan, NASA and the Russian Aviation and Space Agency announced on Feb. 11.

Within the next several weeks, the Zvezda launch window will be proposed for approval to the International Space Station Partners in accordance with the ISS Control Board process.

Following joint meetings in Moscow, including a General Designer's Review and a Joint Program Review, Rosaviakosmos has proposed that Zvezda (Russian for "Star") — the early crew living quarters — be launched on a Proton rocket with second and third stage engines modified to increase reliability.

The 42,000-pound Zvezda not only provides the early living quarters for astronauts and cosmonauts, but also the life support system, electrical power distribution, data processing system, flight control system, and propulsion. While many of these systems will be supplemented or replaced by later U.S. station components, Zvezda always will remain the structural and functional center of the Russian segment of the International Space Station.

Zvezda has a solar-array wingspan of 97.5 feet tip to tip, and is 43 feet long from end to end. The module contains three pressurized compartments and four docking ports.

Following Zvezda's launch and about 15 days of free flight, the ISS will rendezvous and dock with its newest module.

Launch of Zvezda sets the stage for the launch of other ISS components undergoing final testing at NASA's Kennedy Space Center in Florida.

These components include a small truss segment that will serve as the support structure for other station hardware; the first set of solar arrays; the United States Destiny Laboratory; the Canadian-built Space Station robot arm; and several truss segments.

Security remains full-time concern

Workers' vigilance keeps KSC safe

As hundreds of employees stood in the parking lot outside the Headquarters Building on a Thursday afternoon, there were plenty of sources for possible frustration.

Having been abruptly evacuated from the building, the employees could do nothing but talk to each other. They had to wait for KSC security personnel to allow them back into the building. And though it was near the end of a shift, the employees were not allowed to get in their cars and drive home, either.

In spite of that, few complaints were heard — and that fact above all shows a general understanding about the importance of security at the Center. Everyone was very cooperative, even though it was late in the afternoon on the day prior to launch and the evacuation interrupted numerous meetings and inconvenienced many.

The evacuation, which drew attention from local newspapers and television stations, offered a conspicuous indication of the security measures that are in effect 24 hours a day, seven days a week at KSC. As the NASA Center with the most valuable collection of launch architecture and space flight equipment, KSC maintains a level of security higher than those at most other centers.

Even with a well-trained security force, the Center's well-being depends largely on the vigilance of the workforce itself. That security awareness was at the heart of the Feb. 10 incident, which proved to be a false alarm.

Two of KSC's employees reported to the NASA Security Office that they had observed two men enter the rear of the Headquarters building wearing parkas (despite 75-degree weather) and carrying backpacks.

That report prompted the evacuation of the Center's largest office building. Security officers

watched employees as they left the building but saw no one fitting the description given by the callers. They then began searching the building for suspicious people and packages.

As employees waited in the marshalling area, word began to spread about the reason for the evacuation. Hearing the mention of the oddly dressed men, two people involved came to a realization that their actions may have caused the evacuation, and they told security officers.

Despite the inconvenience that resulted, KSC Security Chief Calvin Burch praised the employees who reported this incident and said that SGS security responded quickly and appropriately. He said that heightened security reflects an awareness of incidents of terror in recent years — the bombings at the World Trade Center, Oklahoma City, Khobar Towers in Saudi Arabia and embassies in Africa, in addition to well-publicized shootings at the Capitol Building in Washington, D.C., and in schools.

Though there are current reasons to be wary of terrorist acts, the existence of stringent security is not a recent development at KSC. The most noticeable measure, individual badge checks at guard gates, dates back to the founding of the Center in 1963.

"Because we are a launch center and have the kind of assets and activities we have here, we probably have one of the more visible security programs within NASA," Burch said.

"That's a program that's been in place since the beginning of time, if you will. We want to make, from a security standpoint, a very safe atmosphere for employees to do their jobs."

Security officers at the three gates entering KSC check approximately 20,000 badges during an average day. The Center uses a practice of increased scrutiny as people move closer to the primary space flight assets, including further badge checks and limited



Protecting Space Shuttle crews on launch day is only one of many tasks performed by KSC security personnel, who control all access to the Center.

access and mechanical card readers in such sensitive areas as the Vehicle Assembly Building and the Space Station Processing Facility.

KSC's security strategy, Burch said, is intended to make the potential for damaging incidents less likely as one moves deeper into the Center. If a threat does arise, the goal is to catch it at the perimeter of the Center — as far from employees and valuable equipment as possible.

Space Gateway Systems (SGS) is responsible for implementing many of the day-to-day security measures at both KSC and CCAFS under a consolidated support contract. SGS Security Officers must successfully complete a formal training program that meets the requirements of the U.S. Department of Justice.

Additionally, all SGS Security Officers meeting this training requirement are designated as Federal Officers and have Federal Arrest Authority. Officers performing Law Enforcement and Special Weapons and Tactics (SWAT) functions must undergo continuous and often arduous training and be certified in their specialty areas.

Training is periodically conducted with the Federal Bureau of Investigation and other federal, state and local agencies.

The recent incident at the Headquarters Building came at a time when KSC was making the transition to a lower threat condition rating and did not affect the

change in security status.

Since September 1998, KSC has been in Threatcon Alpha, the first of four levels of heightened security that can be declared in response to perceived threats. While some other centers have been in Threatcon Bravo during that period, Burch notes that KSC's Alpha status includes security practices other centers adopt only for Bravo or higher status.

Burch said that at times in the past KSC has taken measures reflecting Threatcon Charlie, although the status wasn't publicly declared.

In determining Threatcon status, KSC's security office works with the 45th Space Wing and NASA Headquarters. KSC can independently raise its status but must receive approval from NASA to downgrade the status. The recent move to Threatcon Normal occurred after Burch (in coordination with the 45th Space Wing) recommended the change to Center Director Roy Bridges, who then gained concurrence from NASA Headquarters.

The new status does not bring any dramatic changes in KSC's security measures. Burch emphasized that KSC will be no less safe as a result of the status change.

"Our intent is to maintain a high-level security program every day and be able to respond to any incidents that could occur — and sometimes do occur," he said.

Center prepares for robot invasion

The NCAA basketball tournament, widely known as "March Madness," involves competitions at regional sites leading to an eventual national champion.

For the second consecutive year, KSC will be involved in a spring-time tournament with a similar structure. The Center will host the FIRST 2000 Southeast Regional Competition, a high school robotics showdown to be held March 9-11.

Twenty-three teams are scheduled to compete in the Southeast Regional, with 15 of the Florida teams co-sponsored by KSC. In preparation for the contest, KSC had 18 employee mentors working with members of local teams. Competing teams include students from Astronaut, Titusville, Rockledge, Cocoa Beach, Eau Gallie, Satellite, Palm Bay, Melbourne, Bayside and Melbourne Central Catholic high schools.

The FIRST organization (For

Inspiration and Recognition of Science and Technology) was founded in 1989 by New Hampshire entrepreneur and inventor Dean Kamen. The non-profit organization brings together business, education and government entities in programs designed to engage youngsters in the areas of science, engineering and technology.

Brevard County first entered the competition in 1997 with the formation of the Space Coast Team. The involvement of local schools and industry sponsors grew in 1998, and KSC took part last March by hosting the regional competition for the first time.

In addition to hosting the event again, KSC has awarded 20 grants of \$5,000 each this year to help Florida teams make entries.

The contest matches students from high schools with mentors from businesses and other organizations. Each team is given the



Students from Titusville and Astronaut High Schools were among those who took part last year in the FIRST Robotics Competition regional event at the KSC Visitor Complex.

same package of components from which a robot must be created. Once assembled, the robots compete against each other in a series of exercises before a panel of judges. The winners from the regional competitions advance to the national tournament.

The contests will take place in the Rocket Garden at the KSC Visitor Complex. KSC is still seeking volunteers for both technical and non-technical duties

from March 7 through the end of the competition. Shifts last 4-5 hours.

Volunteers must attend an orientation dinner meeting on March 7 at 6 p.m. in the Early Space Exploration building.

Volunteers will be given FIRST T-shirts. To volunteer or for more information, contact Patricia Ermerins at 867-2363. Information also is available at the FIRST Web site: www.usfirst.org.

KSC officials committed to 37th Space Congress

Mark your calendars: The 37th Space Congress is scheduled for May 2-5 in Cape Canaveral.

The theme for this year's gathering, "Space Means Business in the 21st Century," reflects the trend toward commercialization and privatization in space launching.

Ed Gormel, executive director of KSC's Joint Performance Management Office, will serve as the panel chairman for the opening discussion: "50 Years of Space Exploration."

Other KSC officials scheduled to participate in presentations include Dr. Gale Allen, Technology Programs and Commercialization System; Nancy Bray, Joint Performance Management Office; Gregg Buckingham, University Services; Dr. James Brown, associate director for Logistics Systems; Shannon Bartell, deputy director of Space



Station and Shuttle Payloads; and Roy Bridges, KSC center director.

Exhibits and a science fair are also planned for the event.

The 37th Space Congress is sponsored by the Canaveral Council of Technical Societies. Major KSC contractors, including United Space Alliance and Boeing Co., will be participating.

All activities will take place at the Radisson Resort at the Port. Registration will be open May 1 from noon to 5 p.m. at the Radisson. For more information, call 868-1623 or e-mail: spacecongress@spacecongress.org.

Potential life-saver



KSC Director Roy Bridges signs up on Feb. 15 to give a blood sample in the KSC Bone Marrow Drive at the NASA Training Auditorium. The four-day donor registration drive at KSC and Air Force and contractor locations brought in 1,097 new potential donors — a KSC record. Small blood samples were taken from each person, and the blood was sent to a laboratory so that marrow types could be determined. The actual harvesting of marrow occurs only with a donor's later consent if the marrow type is matched to that of a patient in need of a transplant. This was the third marrow drive at KSC and the first since 1997. The drive was co-sponsored by KSC and the American Red Cross.

County Commission pays tribute to space pioneers

The Brevard County Commission recently adopted a resolution recognizing the efforts of all those involved in the 50-year history of space launches in Florida.

The resolution reads as follows:

Whereas, the first space launch from Florida occurred on July 24, 1950, and the first U. S. satellite in orbit was launched from Florida on January 31, 1958: and

Whereas, the American in space was launched from Florida May 5,

1961, and the first American to orbit the earth was launched from Florida on February 20, 1962: and

Whereas, the first human to set foot on the moon was launched from Florida on July 16, 1969, and few events of the past 1,000 years have affected so many lives so dramatically as the departure from the planet earth: and

Whereas, over the years, many of Brevard County's residents have been a part of the team which has

launched man into the new millennium with space flight: and

Whereas, in recognition of the great events of the last millennium, The Board of County Commissioners wishes to pay homage to the women and men of Brevard County, Florida, U.S.A.

NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF COUNTY COMMISSIONERS OF BREVARD COUNTY, FLORIDA, does hereby unani-

mously recognize and commend THE WOMEN AND MEN OF BREVARD COUNTY WHO MADE IT POSSIBLE FOR MAN TO MAKE HIS FIRST STEPS INTO THE WORLDS BEYOND THIS PLANET EARTH and express its appreciation for their dedicated service to our County, State and Nation. DONE, ORDERED, AND ADOPTED, in regular session, this 1st day of February, AD, 2000.

Grants ...

(Continued from Page 1)

ment," Williams said. "While at F.I.T., I am studying under the mentorship of a world expert in the flame retardancy of polymers. I couldn't have received that expertise here — it's a very specialized field of study."

Williams is an example of the many KSC employees who have benefitted from the NASA Fellowships Program, which provides the opportunity for both long- and short-term study at academic or commercial institutions. The program serves as one tool by which KSC prepares its workforce for a greater emphasis on research as part of the Spaceport Technology Center concept.

The awarding of NASA fellowships is a highly competitive process. In Williams' case, she came out on top among several applicants from KSC and then traveled to Washington, D.C., to face an interview with officials from NASA Headquarters, Johnson Space Center and contractor Lockheed Martin. Her reward — in addition to the fellowship itself — was a trip to Washington last March for the Annual Goddard Memorial Dinner, at which she met NASA Administrator Dan Goldin.

Three KSC employees received fellowships this year in the most recent cycle of awards. Jennifer Murray of the engineering development directorate received the George M. Low Memorial Engineering Fellowship, Gale Allen of Engineering Development was chosen to participate in the Senior



Martha Williams, with her husband Robert, right, meets NASA Administrator Dan Goldin last March after receiving her Dryden Science Fellowship.

Executive Seminar at Carnegie-Mellon University, and Catherine Alexander of the Joint Performance Management Office was chosen for the executive seminar "Leading with Impact: Linking People, Strategy, Results" at Penn State University.

Murray, like Williams, received grants of \$10,000 from NASA and \$2,000 from the National Space Club. She plans to pursue her doctorate degree in electrical engineering with an emphasis on biomedical digital image processing beginning in September.

Murray, who holds a master's in biomedical engineering from the University of Miami, said her research will have applications in such areas as landing systems for aircraft, automatic detection of gases, and the early detection of breast cancer. She is particularly interested in the use of biomedical sensors with application toward image processing utilizing 1-, 2-

and 3-dimensional techniques.

"I'm really excited about this opportunity," said Murray, a NASA/KSC employee for nine years. "I'm looking forward to dedicating myself to full-time research, and I'm looking forward to coming back and applying it to a major NASA research area."

In addition to Williams, Mike O'Neal of the advanced development and Shuttle upgrades directorate was the recipient of a fellowship in 1999.

O'Neal took part last June in the Senior Executive Seminar at Carnegie-Mellon University in Pittsburgh, Pa.

The Senior Executive Seminar is an annual three-week program at Carnegie-Mellon's School of Urban and Public Affairs. The program emphasizes management concepts, analytical techniques and human behavior in organizations, with the goal of developing greater leadership skills.

While fellowship recipients are nothing new at KSC, Williams' pursuit of a doctorate in chemistry is somewhat unusual for the Center. Engineering, rather than science, is the more typical course of study.

Williams, who has worked at KSC since 1989, specialized in the analysis of a variety of materials, including those used in the Space Shuttle and launch facilities. As part of her Dryden Fellowship, she now works in concert with Langley Research Center to study flammability, degradation and the effects of fire on specific polymer materials, including a foam material proposed to be used in the Reusable Launch Vehicle program and future launch structures.

Having completed her year of full-time study, Williams now alternates between classes at F.I.T. and her research work at KSC. She hopes to complete her doctorate program in a three-year span; such doctorates can require four to five years.

"It's been very difficult but very positive," Williams said. "(Professors) don't cut me any slack. Although I work for NASA, I still have to meet all the requirements of other doctoral students, such as getting in research proposals and taking qualifying cumulative exams."

NASA has not yet issued its call for applications for the 2001 awards. For general information about the Agencywide Training and Development Program, call Loretta Dreier at 867-9246 or consult the following Web site:

www.hq.nasa.gov/office/codef/codeft/

Luncheon speaker entertains, inspires

There was thunderous laughter and reflective head-nodding in equal measure at the sold-out African-American History Month Celebration Luncheon held on Feb. 16 in the Early Space Exploration Building.

The featured speaker, Dr. Julian M. Earls, deputy director for operations at Glenn Research Center, galvanized an audience of about 400 with a 30-minute talk that mixed humorous anecdotes and instructive aphorisms. Without ignoring the historical injustices black Americans have faced, Earls focused on the future while emphasizing the importance of humility and humor.

Following a glowing introduction from NASA astronaut and former KSC employee Joan Higginbotham, Earls took the podium and said: "After that introduction, I can't wait to hear myself speak."

That line drew the first of many laughs from an appreciative audience that included KSC Director Roy Bridges and Deputy Director for Business Operations James Jennings.

Looking out at the audience, Earls said, "I'm elated to see this rainbow of colors working together."

The accomplished scientist gave credit for his many accomplishments to his parents, neither of whom went beyond eighth grade in school but who instilled in him a love of learning and a respect for fairness during his childhood in North Carolina. In describing the progress of black Americans, he quoted his father: "A mule cannot kick when it's pulling and cannot pull when it's kicking." Earls added, "You can't let anger and hatred overcome you."

Earls, a successful marathon runner, spoke of the discipline required to prepare for success. He also spoke with enthusiasm about his experiences teaching beginning algebra part-time at a community college in Ohio. He asked the audience to encourage young people to pursue studies of science and math, even if they may not seem exceptionally gifted in



Astronaut Joan Higginbotham, right, a former KSC employee, presents a plaque of appreciation to guest speaker Dr. Julian Earls at the African-American History Month Celebration Luncheon on Feb. 16. Below, Mack McKinney, left, chief of program resources management and chairperson for African-American History Month, stands with Dolores Abraham of the Astronaut Office beside a poster honoring the late Robert Henry Lawrence, the first black astronaut.



those subjects.

"If you take physics and fall on your face, you're a lot closer to getting a Nobel Prize than those who never took the course," Earls said.

And he tempered his embrace of education and science by pointing to the importance of such human qualities as fairness and honesty.

"Being human is most important of all," he said. "You can have all the scientific knowledge in the world at your fingertips, but if you're not a caring human being you're the most dangerous creature on earth — and the most unful-



filled."

The event, part of KSC's month-long observance of African-American History Month, was hosted by Chief Financial Officer Nap Carroll. Bridges briefly spoke, emphasizing the need to embrace the future with enthusiasm.

The event included a tribute to Evelyn Johnson, an employee in

KSC's Equal Employment Opportunity Program Office, who died in December. John Maryland, chairperson for the Black Employee Strategy Team, presented plaques to family members.

The luncheon ended with KSC intern Ursula Johnson's rendition of the Negro national anthem, "Lift Every Voice and Sing."

Visitor Complex unveils exhibits, Debus facility

As you approached the Kennedy Space Center Visitor Complex on Feb. 19, the sparkle of neon lights and aroma of wonderful food set the scene for the start of an outstanding event to showcase four new exhibits at Kennedy Space Center. The opening of these new interactive, hands-on exhibits to enthuse and educate visitors marked the final phase of a more than \$120 million redevelopment project by Delaware North Parks Services of Spaceport, Inc.

The event began at the unique conference facility, featuring a bird's-eye view of the beautiful, three-acre Rocket Garden. The Dr. Kurt H. Debus Conference Facility, named for KSC's first director, is located within the new Early Space Exploration building. A separate exhibit is dedicated to the historical missions that paved the way for our current Space Shuttle program.

The futuristic exhibit, called Exploration in the New Millennium, takes visitors on a journey

into a bold vision of human exploration beyond Earth in the coming centuries. The guests receive an Interplanetary Exploration Passport filled with intriguing space questions that are answered as they arrive at the various stamping stations throughout the exhibit.

The exhibits include three-dimensional views of Mars, a piece of Mars rock that fell to Earth as a meteorite and an entertaining presentation of technologies which may take us to the stars.

After guests had taken time to enjoy the new exhibits and wonder in the creative approach to explain space travel, the evening's speakers were introduced by event master of ceremonies, astronaut Rick Searfoss.

The evening was topped off by the introduction of the most exciting guest opportunity now available daily — Astronaut Encounter. The live show is aimed at inspiring children to strive for



Ute Debus, left, and Sigi Debus Northcutt were on hand for the dedication of the conference facility to their father, Dr. Kurt H. Debus, KSC's first director.

excellence through hard work, dedication and education.

The evening's astronauts were Gene Cernan and Wally Schirra. During this innovative show, guests viewed mission briefings, video footage, space artifacts and have the once-in-a-lifetime opportunity to ask questions and receive answers of personal stories of space travel by those who lived it.

"It is inspirational to feel the children's inspiration as they see these exhibits," said Gene Cernan.

"It is important to give children the tools to pick up where we left off."

The overall vision of all the speakers is the future of the space program and the important role children and young adults play in the exploration of space.

"The goal is to inspire young people to search for the mystery of life," Center Director Roy Bridges said. "These exhibits will encourage children to continue this journey and learn the fun of exploring."

NASA moves four officials into new positions

NASA Administrator Daniel S. Goldin announced recently that the Agency would merge the Chief Technologist's office with the Office of Aero-Space Technology to better focus the Agency's strategy for maintaining its long-term technology base.

Chief Technologist Samuel Venneri will retain that position while becoming Associate Administrator for Aero-Space Technology. He will succeed Lt. Gen. Spence (Sam) Armstrong, USAF (Ret.), who will become senior advisor to the administrator.

"Gen. Armstrong will be instrumental in leading the Agency's transition from operations to cutting edge research and development," said Goldin. "Gen. Armstrong led the revitalization of the Aerospace Technology Enterprise, and it is with great enthusiasm that I have asked him to take on this new assignment."

Armstrong will spearhead a new initiative that will allow the Agency

to create new synergies with universities, industry and other scientific and technical agencies. He will work with academia and industry — both aerospace and non-aerospace — to identify new opportunities for NASA partnerships. He will also coordinate NASA's plans with the Department of Defense, Federal Aviation Administration and other agencies to ensure that NASA's activities are integrated with those of other agencies and that NASA establishes government-wide partnerships where appropriate.

Goldin also announced the following personnel appointments:

- W. Brian Keegan has been appointed chief engineer.
- Orlando Figueroa has been appointed Deputy Chief Engineer for Systems Engineering.
- Dr. Mary Cleave has been appointed deputy associate administrator (advanced planning) for the Office of Earth Science.

In the combined position,

Venneri will be the administrator's principal advisor on Agency-wide technology issues. Under Venneri, the Office of Aero-Space Technology will be charged with developing integrated, long-term, innovative Agency-level technology for aeronautics and space. Venneri will

also be responsible for developing new commercial partnerships that exploit technology breakthroughs, and for establishing and maintaining technology core competencies at the NASA Centers.

Venneri has been NASA's Chief Technologist since 1996.



John F. Kennedy Space Center

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